

What is claimed is:

- 1. A resonant electrical generation system, comprising:
- a) a resonator configured to provide resonating movement in a resonating element;
- b) an energy source, operatively coupled to the resonator, to support resonating movement of the resonating element; and
- c) an electrical generator, operatively coupled to and driven by the resonator, configured to generate electrical power from the resonating movement.
- 2. A system in accordance with claim 1, wherein the resonator includes:
  - a) a base;
  - b) a spring element, coupled at one end to the base; and
  - c) a mass, coupled to another end of the spring element, configured for resonating movement with respect to the base.
- 3. A system in accordance with claim 1, wherein the energy source includes:
  - a) an elongated combustion tube having a mixing chamber and an exhaust port;

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- b) a fuel source, coupled to the mixing chamber of the combustion tube, configured to provide fuel to the combustion tube; and
- c) an igniter, in the combustion tube, configured to ignite the fuel.
  - 4. A system in accordance with claim 3, further comprising:
  - a) a cylinder, coupled to the exhaust port of the combustion tube;
    - b) a piston, reciprocally disposed in the cylinder; and
- c) a push rod, coupled to and between the piston and the resonator, configured to transmit movement of the piston to the resonator.
- 5. A system in accordance with claim 3, wherein the combustion tube is configured to produce pulsatile combustion gasses out of the exhaust port corresponding to a resonant frequency of the resonator.
- 6. A system in accordance with claim 3, wherein the combustion tube has a diameter less than approximately 1100 microns.

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- 7. A system in accordance with claim 1, wherein the electrical generator includes:
  - a magnet and a coil, one of which is attached to the resonator and configured for resonating movement along a movement path, and the other one of which is disposed in a fixed position adjacent the movement path, the magnet and coil being movably disposed with respect to one another so that a magnetic field of the magnet is capable of inducing a current in the coil.
- 8. A system in accordance with claim 1, wherein the resonator includes:
  - a) a base;
  - b) a spring element, coupled at one end to the base; and
  - c) a mass, coupled to another end of the spring element, configured for resonating movement with respect to the base; and

wherein the energy source includes:

- d) an elongated combustion tube having a mixing chamber and an exhaust port;
- e) a fuel source, coupled to the mixing chamber of the combustion tube, configured to provide fuel to the combustion tube; and

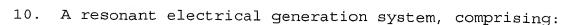
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- f) an igniter, disposed in the combustion tube, configured to ignite the fuel.
- 9. A system in accordance with claim 1, wherein the resonator resonates at a frequency between approximately 50 Hz to 2 KHz.

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- a) a resonating system configured to provide resonating movement in a resonating element;
- b) a combustion tube, operatively coupled to the resonating system, configured to produce pulsatile combustion gases to support resonating movement of the resonating system; and
- c) a magnet and a coil, one of which is attached to the resonating system and configured for resonant movement along a movement path, and the other one of which is disposed in a fixed position adjacent the movement path, the magnet and coil being movably disposed with respect to one another so that a magnetic field of the magnet is capable of inducing a current in the coil.
- 11. An apparatus in accordance with claim 10, wherein the resonating system includes:
  - a) a base;
  - b) a spring element, coupled at one end to the base; and
  - c) a mass, coupled to another end of the spring element, configured for resonating movement with respect to the base.

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- 12. An apparatus in accordance with claim 10, further comprising:
  - a) a cylinder, coupled to the exhaust port of the combustion tube;
    - b) a piston, reciprocally disposed in the cylinder; and
  - c) a push rod, coupled to and between the piston and the resonating system, configured to transmit movement of the piston to the resonating system.
- 13. An apparatus in accordance with claim 10, wherein the combustion tube is configured to produce pulsatile combustion gasses out of the exhaust port corresponding to a resonant frequency of the resonating system.
- 14. An apparatus in accordance with claim 10, wherein the resonator resonates at a frequency between approximately 50 Hz to 2 KHz.
- 15. An apparatus in accordance with claim 10, wherein the combustion tube has a diameter less than approximately 1100 microns.

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- 16. An electrical generation system, comprising:
- a) a resonating structure configured for resonating movement, including:
  - 1) a base;

and

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- 2) a spring element, coupled at one end to the base;
- 3) a mass, coupled to another end of the spring element, configured for resonating movement with respect to the base;
- b) an energy source, operatively coupled to the resonating structure, to support resonating movement, including:
  - an elongated combustion tube having a mixing chamber and an exhaust port;
  - 2) a fuel source, coupled to the mixing chamber of the combustion tube, configured to provide fuel to the combustion tube; and
  - 3) an igniter, disposed in the combustion tube, configured to ignite the fuel; and
- c) an electrical generator, operatively coupled to and driven by the resonating structure, configured to generate electricity due to the resonating movement.

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- 17. A system in accordance with claim 16, wherein the electrical generator includes:
  - a magnet and a coil, one of which is attached to the resonating structure and configured for resonant movement along a movement path, and the other one of which is disposed in a fixed position adjacent the movement path, the magnet and wire being movably disposed with respect to one another so that a magnetic field of the magnet is capable of inducing a current in the coil.
- 18. A system in accordance with claim 16, wherein the resonator resonates at a frequency between approximately 50 Hz to 2 KHz.
- 19. A system in accordance with claim 16, wherein the combustion tube has a diameter less than approximately 1100 microns.